20

ON
THE VARIETIES
IN THE
MUSCULAR SYSTEM
OF THE
HUMAN BODY.

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ON THE VARIETIES IN THE

MUSCULAR SYSTEM OF THE HUMAN BODY.

In the following pages is a summary of the principal varieties in the muscular system which have been recorded in different works, or have fallen under my own observation, comprising some, which have not, to my knowledge, been noticed by anatomical writers.

The subject is interesting from the frequent occurrence of these deviations—on account of the more or less striking analogy they present to the muscular system of animals—and because, in some instances, the surgical anatomy of a region is materially affected by such irregularities in the development of certain muscles.

These irregularities, although more striking when they occur in connexion with a highly developed state of the muscular system generally, are as frequently met with in the thin and spare as in the stout and robust.

Certain regions present these variations to a greater extent than others. Those of the head and face are not much subject to them; in the neck and trunk they are more frequently met with, and most of all in the extremities.

Of individual muscles, or groups of muscles, those appear to deviate least whose functions are the most uniform throughout the animal kingdom; this is particularly the case with the muscles of the head, including those which move the eye-ball; those connected with mastication, deglutition, &c: these are for the most part constant and regular.

Those which enable the extremities to perform actions peculiar to the different species of animals,—conferring the power of swimming, burrowing, climbing, or flying—as, for instance, the pectoral muscles, are constantly varying in their configuration, and some occasionally present analogies with the muscles of animals even below the mammalia.

When it is remembered how frequently other parts of the human body resemble in their type and character those of the inferior animals, we are not surprised at finding repetitions of the same kind in the muscular system. To trace out such analogy is interesting.

Many deviations from the normal condition of the muscles are sometimes met with in the same individual, where they would appear associated together in a remarkable degree, and to a greater extent than in many other bodies taken collectively. They may be confined to one or extend to both sides: it is more common to find them unsymmetrical.

The muscles of the several parts of the body in which these varieties occur, are, for convenience of reference, arranged in their ordinary classification :

it will be seen that in some regions very few are exempt.

The minor differences which necessarily present themselves, in common with those of the other structures, are endless. Albinus says of them: "Quantæ autem musculorum in aliis hominibus dissimilitudines sunt! nequidem duobus unis hominibus similes toti totis. * * * * Et quis singula recenseat!"

The following is an incomplete exposition of the subject; but it is hoped that it may, in some measure, fulfil its object, although many known deviations from the ordinary condition of the muscular system may have been omitted, and still more remain to be recorded by future observers.

Subjoined is a list of the principal works which have been consulted, and to which further reference may be made.

Edward Tyson—Anatomy of the Orang Outang.

Cowper—Myotomia reformata.

J. D. Santorini—Observationes Anatomicæ.

J. G. Salzmann—Dissertatio medica sistens plurium pedis musculorum defectum.

Albinus—Historia musculorum hominis.

Albinus—Academicarum Annotationum Libri.

James Douglas—Myographiæ comparatæ specimen.

J. B. Winslow—Exposition anatomique de la structure du corps humain.

J. C. Rosenmüller—De nonnullis musculorum corporis humani varietatibus.

W. Isenflamm and J. C. Rosenmüller—Beitrage für die Zergliederungskunst.

E. Sandifort—Exercitationes Academicæ.

S. T. Sœmmering—De corporis humani fabricâ.

Gantzer—Dissertatio anatomica musculorum varietates sistens.

Meckel—Handbuch der menschlichen anatomie, or French translation, by Jourdan and Breschet.

D. Boehmer—Observationes anatomicæ.

T. Sœmmering—Von baue des menschlichen korpers. Ungearbeitet von F. W. Theile.

Jones Quain—Elements of Anatomy, edited by R. Quain and W. Sharpey.

Richard Quain—Anatomy of the Arteries.

In the head and face the muscles are found to differ chiefly in size; there are, however, a few unimportant variations from their usual condition.

Independently of its varying breadth and thickness the attrahens aurem is occasionally found double—(Walther).

Ear.—The retrahens aurem, sometimes consisting of two, three, or four fasciculi; and some of its fibres may be continuous with the sterno-cleido-masdeus. A portion of its origin taking place from the occipital bone between the complexus and trapezius.

Eye. — Obliquus superior double. The accessory muscle slender and delicate—the comes obliqui superioris of Albinus.

Tensor tarsi; sometimes scarcely visible: it is considered by Theile as originating from the upper and lower portions of the ciliaris.

Corrugator supercilii, arising by two, and even three tendinous portions.

The strata of muscular fibres extending in different directions across the side of the face, appear, in some instances, as scattered portions continued from the platysma myoides; but more frequently as modifications of the risorius of Santorini. He says of this muscle, "Musculus novus, nobis risorius, incertæ figuræ, perpetuus tamen, duplex interdum ac triplex, summo triangulari copulatur, et risui inservire putatur." It has been minutely described by Albinus, Cowper, and others.

Fibres may originate from the zygoma; from the fascia covering the parotid gland or masseter, and reaching forwards, to be interwoven with the muscles of the mouth; crossing the platysma transversely, or describing curves, which look downwards. Albinus saw them connected posteriorly with the external ear.

In other instances fibres spring from the malar bone, and their direction downwards and inwards to be connected with the muscles at the commissure of the lips, gives the appearance of an accessory zygomaticus.

The zygomaticus minor is sometimes developed to a considerable extent; it may be double or bifurcated at the lower extremity, where Morgagni found it divided into three portions. Unlike the rest of the muscles of the face, it is frequently absent.

The muscles of the trunk, including more particularly the deeper seated ones of the thoracic and dorsal regions, present, as might be expected from their complexity and intricacy, many differences of minor importance—these consist chiefly in their constantly varying size and attachments to the spinous and transverse processes of the vertebræ, as well as to the other bones forming the walls of the chest, and consequently in their reciprocal connexions. Such differences are alluded to in the ordinary description of these muscles.

In the muscles of the male and female perineum no very striking peculiarities have occurred to me beyond those which are noticed in most anatomical works.

MUSCLES OF THE NECK—SUPERFICIAL REGION.

Platysma myoides.—Presents many varieties in its development; stray and detached portions extending in different directions, resembling the panniculus carnosus of animals; but less intimately connected with the integument, being mostly separated from it by fat.

A large fasciculus running across the muscle just below the chin—(Gantzer, Zazorsky).

A slip arising from the clavicle, extending outwards towards the deltoid, where it became lost beneath the skin—(Gantzer).

Sterno-cleido-mastoideus.—The clavicular part arising by two and even three separate portions, as in some animals; remaining perhaps distinct up to their insertion.

No interval between the sternal and clavicular portions; the latter reaching as far as the outer third of the clavicle to meet the trapezius.

Oftentimes a fleshy slip, perhaps tendinous at either extremity, crosses the upper part of the muscle near its insertion—(Albinus).

The clavicular portion continued downwards to a considerable extent over the sternum to be connected with the "rectus sternalis." By the intervention of the latter muscle when considerably developed it may be continuous with the rectus abdominis, or with the fascia, covering the upper extremity of this muscle.

A fleshy slip, extending from it to angle of the jaw—(Brugnone).

SUBMAXILLARY REGION.

Digastricus.—The posterior belly proportionally large when the stylo-hyoideus is absent. Double—(Albinus).

The fibres of the two anterior bellies blended with each other, and expanded into a muscular plane, with considerable attachment to the jaw—(Fleischmann, Erlanger Abhandlung).

The anterior belly on each side strengthened by a large fasciculus from the os hyoides, to be connected with the lower jaw, so that each appeared double—(Gantzer, Sœmmering).

The anterior portion double—(Fleischmann).

The posterior belly terminating at about the middle of the body of the lower jaw, having little or no connexion with the os hyoides; thus resembling the more simple muscle of animals; as in the dog, where it consists of only one portion inserted into the middle of the lower jaw—(Douglas).

Stylo-hyoideus.—Deficient on one or both sides. An additional muscle, the stylo-hyoideus of Albinus; it may pass beneath the hyo-glossus to its insertion. The digastricus separating it from the proper stylo-hyoideus. The external carotid frequently runs between them, the accessory muscle lying more deeply and close to the stylo-glossus.

Connected by some of its fibres with the angle of the lower jaw.

Stylo-glossus.—Double on both sides—(Meckel). Deficiency of one or both—(Quain). Boehmer in such case found the other styloid muscles stronger than usual. An accessory fasciculus to be connected with the middle of the pharynx; the stylo-pharyngeus alter of Boehmer.

Some of its fibres arising from the angle of the lower jaw—(Theile).

STERNO-HYOID REGION.

Sterno-hyoideus. — Intersected by a tendinous line a little above the sternum, as in the giraffe. Arising from the middle of the clavicle—(Kelch). Intimately connected by cross fibres with its fellow, or united at its lower part with the sterno-thyroideus—(Albinus). As in the dog—(Douglas). Continuous above with the fibres of the mylo-hyoideus.

Sterno-thyroideus.—Double; one placed over the other—(Gantzer). Intersected by a transverse or oblique tendinous line near the corresponding one of the last muscle—(Albinus). Continuous above with the thyro-hyoideus. Some of the fibres blended with those of the inferior constrictor.

Thyro-hyoideus.—An accessory portion internal and smaller—(Cowper). A slip connecting it with the sterno-thyroideus. Intimately united with the inferior constrictor. Connected with the cricoid cartilage.

Musculus glandulæ thyroideæ. — Not uncommon to meet with this muscle, which is generally, however, confined to one side. Usually formed by a fasciculus of the middle or internal fibres of the thyro-hyoideus; it may arise from the ala of the thyroid cartilage, or derive a portion of its origin from the os hyoides.

Crico-thyroideus. – Consisting of two distinct fasciculi; one anterior to the other. Some of its fibres blended with those of the inferior constrictor.

Omo-hyoideus.—Wholly wanting in one or both sides, as in many mammalia. More common to find it imperfectly formed. The upper portion deficient; the scapular half of the muscle terminating in the fascia of the neck behind the sterno-cleido-mastoideus. The fact of its not having, in these instances, any connexion with the os hyoides, would support the opinion of many anatomists, that these muscles are destined especially to act upon the fascia of the neck.

Detached portions of the sterno-hyoid and sterno-thyroid muscles supplying the place of the anterior belly—(Sœmmering). Arising from the middle of the clavicle—(Albinus). Arising from a considerable portion of the middle of the clavicle, its fibres united with the origin of the sterno-hyoideus, with which it formed a single mass of muscle—(Winslow).

The muscle, when arising from the clavicle, concealing the subclavian artery—(R. Quain, plate 25). In such cases the lower portion is absent.

The inferior portion double—(Duille, Musc. Varietates.) The same described by Winslow, where one origin was derived from the usual situation, and the other from the clavicle.

Tendinous intersection scarcely discernible, or altogether deficient.

The muscle ascending over the os hyoides, having a very slender connexion with that bone through the medium of the fascia of the neck, to be inserted into the lower jaw beneath the mylo-hyoideus, and close to the genio-hyoideus; it must have assisted in depressing this bone.

A fasciculus arising from the scapula with the omo-hyoideus, crossing the principal vessels and nerves at the lower part of the neck, and inserted into the cartilage of the first rib—(Sœmmering).

Corresponding additional muscle arising flat from the superior costa of the scapula, behind and internal to the omo-hyoideus, crossing the subclavian vessels and axillary plexus, in which situation it was as thick as the little finger, to be attached by a strong round tendon to the middle of the upper surface of the clavicle.

Mylo-hyoideus. — Very firmly united with the tendon of the digastricus. Continuous with some of the fibres of the sterno-hyoideus. Diminutive; a large anterior portion of the digastricus apparently compensating. A distinct and separate internal fasciculus.

Genio-hyoideus.— Imperfect, or altogether absent; sometimes replaced by an accessory portion of the mylo-hyoideus in the mesian line—(Duille). Double on both sides—(Mayer).

The two muscles so intimately connected in the median line that they appeared as one—(Theile).

PHARYNX.

Constrictor inferior.—The fibres which arise from the thyroid cartilage blended with those of the sterno-thyroideus or crico-thyroideus.

Constrictor medius.—Additional points of attachment to the thyro-hyoid ligament (syndesmo-pharyngeus)—(Douglas). To the body of the os hyoides and the stylo-hyoid ligament—(Quain).

Constrictor superior.—Immediately behind this muscle an additional stratum of muscular fibres is sometimes found on each side of the middle line, of a more or less symmetrical form.

Arising by a strong-pointed fasciculus from the basilar process; the fibres, as they descended over the proper muscles of the pharynx, passed inwards to meet at the middle line, forming two symmetrical fan-shaped muscles, reaching to the lower third of the pharynx.

Similar muscle on the right side, descending from the processus vaginalis of the temporal bone, the fibres taking their course inwardly to be connected with the upper part of the middle line of the pharynx. On the left side, arising from the petrous portion of the temporal bone, passing down and becoming expanded beneath the hyo-glossus, was fixed to the thyroid cartilage.

These are examples of the accessory muscle of the pharynx described by Sandifort, Albinus, and others, under the name of "cephalo-pharyngeus."

Cephalo-pharyngeus. — Sandifort, describing the muscle, says, "Originem trahebat quisque a basi cranii, a latere pharyngis, mox sese pharyngi adplicabat et juxta constrictorem superiorem mediumque, illis cellulosæ ope nexus, progrediebatur, sensim descendendo tenuior factus. Ad constrictorem inferiorem ubi pervenerant, arcuatam acquirebant formam et adscendentes fibræ in mediam pharyngis desinebant."

In the Annotationes Academicæ of Albanus, is a delineation of the cephalo - pharyngeus which descended beneath the superior constrictor, and accompanied the stylo-pharyngeus. "Oriens a basi cranii juxta latus pharyngis demittensque se sub ejus constrictore superiori, deinde adjungebat stylo-pharygei parti posteriori cum eo desinens." Albinus observes, "Parum refert sive velis musculum separatum dicere, sive stylo - pharyngeo adjuvatam partem."

Stylo-pharyngeus.—Stylo-pharyngeus alter, alluded to in connexion with the stylo glossus. (Boehmer.) An accessory muscle from the base of the skull was mentioned in the description of the cephalo-pharyngens. Two accessory fasciculi are alluded to by Meckel (Deutscher Archiv.)

ANTERIOR VERTEBRAL REGION.

Rectus capitis anticus major.—Arising by one or two additional fasciculi from the first and second cervical vertebræ, resembling the muscle in the carnivora—(Meckel). Connected with the anterior and middle scaleni —(Sœmmering).

Rectus capitis lateralis.—Double, as in birds — (Meckel). The accessory muscle arising from the outer part of of the ring of the atlas—(Albinus).

Longus colli.—Accessory portions from the lower cervical vertebræ, or from the first and second ribs—(Sœmmering).

Scalenus anticus.—Accessory portions frequently found appended to the scaleni; one between this and the medius, the "scalenus minimus" of Albinus. The subclavian artery, and part of the axillary plexus of nerves situate in front of it and the rest of the plexus behind—(R. Quain, plate 21).

Scalenus medius.—Accessory portion between this and the posticus, the "scalenus lateralis" of Albinus.

Scalenus posticus.—Wanting (Meckel). Not uncommon to find an accessory scalenus descending from the transverse process of the sixth cervical vertebra to be attached to the acromial end of the clavicle—(Kelch, Beitrage zur Pathol. Anat.)

UPPER EXTREMITY.

Pectoralis major.—Clavicular portion closely united with the anterior fibres of the deltoid; in some instances having precisely the same insertion.

Considerable space between the clavicular and sternal portions. Meckel has noticed the existence of other large fissures in the muscle, which cause it to resemble that of most mammalia, in which it consists of several detached portions.

Extra large muscular origin from the aponeurosis of the external oblique; it may have little or no connexion with that aponeurosis.

Strong muscular slip from the lower margin of the left pectoralis major near its insertion, terminating in a long, narrow, but strong tendon, which passed downwards beneath the fascia, in front of the internal intermuscular septum to be fixed to the internal condyle—(Sœmmering, Caldani, Cruveilhier.)

A fasciculus from the same part of the muscle to join the brachialis anticus — (Sœmmering). To the fascia of the fore-arm—(Gantzer).

A very considerable muscular portion, sometimes detached from it to be connected with the fascia of the arm, or crossing the axilla to join the latissimus dorsi, and which, according to Beck, may, by its action, impede the circulation through the limb.

A tendinous portion crossing the bicipital groove, and becoming connected with the tendon of the supraspinatus, terminates in the capsular ligament, which it strengthens—(Sœmmering). Tiedemann met with a case in which there was a large substratum of fibres added to the muscle. Sternal and costal portions entirely absent; the clavicular part alone present—fleshy and strong—Alfred Poland, in Vol. 6 Guy's Hospital Reports.

Rectus sternalis.—Of the irregular muscles none is more striking than the subcutaneous fasciculus, which is so often found extending over the anterior surface of the inner border of the pectoralis major. This muscle has been frequently described by authors in connexion with the sterno-cleido-mastoideus, or rectus, with each or both of which it may be continuous, and has received the names of " thoracicus," " rectus sternalis," and " sternalis brutorum."

It is usually confined to one side of the body, where it may be double —(Rosenmüller); the two fasciculi becoming united. Sometimes very short; at others it may equal in length the sternum, with whose outer margin it lies more or less parallel. Fleshy in the middle, and more or less tendinous. or aponeurotic, at the extremities. The upper end may be continuous with the tendon of the sterno-cleido-mastoideus, the inferior with the aponeurosis of the external oblique, near the insertion of the rectus abdominis. More commonly it has no connexion with either of these muscles.

The rectus sternalis has been considered a repetition of the sterno-cleido-mastoideus and rectus abdominis; it varies not only in length but in thickness and breadth, which may be from a few lines to several inches.

In some cases there is merely a vestige of this muscle, indicated by a thin tendinous line between the sterno-cleido-mastoideus and fascia covering the rectus abdominis.

Meckel has noticed tendinous intersections in it as in the rectus. It is considered by this anatomist, by Albinus and others, as establishing an analogy with animals where the rectus in particular is continued very far forward over the sternum. For a detail of the attachments and varieties of this muscle see Ed. Sandifort, in Exercit. Acad. An engraving of it is contained in H. F. Isenflamm and J. C. Rosenmüller, Beitrage.

Pectoralis minor.—Arising by additional serrated portions. An accessory muscle placed beneath it, originating by two or three fasciculi from the upper ribs, concealing a part of the serratus magnus and inserted tendinous into the coracoid process —(Rosenmuller),

United to a considerable extent with the coraco-brachialis prior to its insertion.

A distinct fasciculus from the first rib beneath the proper muscle, ascending towards the capsule of the shoulder-joint—(Gantzer).

Portion of the muscle perforating the coraco-acromial ligament, connected slightly with the capsule of the shoulder-joint, and having a tendinous attachment to the humerus near the neck.

Wholly wanting — (A. Poland, Guy's Hospital Reports).

Subclavius.—Bœhmer describes two fasciculi of additional fibres, one from the coracoid process, and the other from the acromion, and attached to the first rib. See also Rosenmuller.

Haller describes an additional fasciculus arising from the upper part of the coracoid process.

Meckel observes that the existence of a double layer of muscular fibres renders the analogy between the subclavius and the intercostals the more striking.

Lateral Thoracic Region.

Serratas magnus.—The muscle arising from the two upper ribs only, by the same number of fleshy portions; this constituted the whole of the muscle, and was inserted into the superior costa of the scapula in front of the levator—(A. Poland, Guy's Hospital Reports).

Deficiency of many of the middle fibres of the muscle, the upper and lower portions being separated by a considerable interval—(Meckel).

One or two of the upper digitations wanting—(Quain.)

The upper extremity separated from the rest of the muscle by an interspace—(Sœmmering).

ACROMIAL REGION.

Deltoid.—Some of the posterior fibres arising from the spine of the scapula, distinct and separate from the rest of the muscle.

An additional fasciculus from the fascia covering the infra spinatus, and from the inferior costa of the scapula.

In an instance cited by Albinus, the accessory portion arose from the bone between the infra-spinatus and the teres minor, analogous to a part of the muscle in Birds—(Meckel).

In many mammalia the deltoid is divided into a clavicular and scapular portion. In others the acromial origin is distinct from that derived from the spine—(Douglas).

SCAPULAR REGION.

Subscapularis.—A band of muscular fibres sometimes extending from the scapula to the neck of the humerus, immediately below the subscapularis.

Teres minor.—Very intimate union with the infra spinatus in their entire length.

Teres major.—United with the latissimus dorsi by a strong fasciculus from its posterior surface.

Coraco-brachialis.—Consisting of two distinct portions from the origin to the insertion. The external cutaneous nerve separating them; but not invariably. Meckel and others notice its resemblance to that of the monkey.

Continuous inferiorly with part of the brachialis anticus. A large portion of the muscle attached to the internal intermuscular septum, to reach which it may cross over the brachial artery*. In a high division of the brachial artery this extra slip may intervene between its two principal branches.

Slip arising from the coracoid process, in connexion with this muscle, passing outwards and expanding over the capsule of the shoulder-joint, to which some of its fibres were attached, and upon which they seemed calculated to act with some effect. The remaining fibres were connected with the outer part of the neck of the humerus.

Biceps.—One of the muscles most subject to vary.

The two portions separate and distinct from each other very low down, and united only by their common tendon.

A third head arising from the humerus towards its inner side, near the insertion of the coraco-brachialis, or between the deltoid and the origin of the internal portion of the brachialis anticus.

In the instance where it was last observed, it derived its origin from the bone between the inner portion of the brachialis anticus and the short head of the triceps.

The upper extremity of this head connected only by fascia with the pectoralis major. A fourth additional head, consisting of a muscular slip, arising from the anterior lip of the bicipital groove, behind the tendon of the pectoralis major, (Meckel) who states that as many as five heads have been observed, the accessory portions not being all fixed to a common tendon.

The third head generally lies external to the brachial artery, but has been seen to cross over the vessel to join the rest of the muscle—(Quain).

It may derive many of its fibres from the brachialis anticus, or from the coraco-brachialis; it may also be an offset from one of the proper heads of the muscle.

Fasciculi originating from the biceps itself taking opposite directions; having a tendinous insertion into the capsular ligament—(Sœmmering). Extending inwards to the intermuscular septum above the inner condyle: the slip crossed over the brachial artery—(Quain, plate 57).

Brachialis anticus.—Some of its fibres continuous with those of the supinator radii longus. The muscle separated into an anterior and posterior portion

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* This is one of the many instances in which the surgical anatomy of a large artery may be interfered with by an additional portion of muscle.

—(Albinus). In some instances the separation is very marked.

A large fasciculus crossing over the brachial artery to be attached to the fascia on the inner side of the arm: a corresponding portion of the muscle also over the artery, to be united with the internal intermuscular septum.

Portion of its fibres to join the biceps; the first step, Meckel observes, towards the formation of a third head to this muscle.

Triceps.—Second or external head from the great tuberosity of the humerus, and connected with the tendon of the teres minor.

Pronator radii teres.—Double. The accessory portion proceeding from the posterior border of the ulna to join the proper muscle at the back part—(Brugnone). This, Meckel observes, resembles it in the monkey.

Its origin sometimes very extensive from the internal intermuscular septum. The brachial artery may pass between this portion and the rest of the muscle—(R. Quain, plates 36 and 37.)

Flexor carpi radialis.—A portion of the tendon continuous with an elongated fasciculus, derived from the abductor minimi digiti—(Gantzer).

Palmaris longus.—Presents many deviations. Often wanting. Its place supplied by detached portions either of the flexor digitorum sublimis or flexor carpi ulnaris—(Rosenmüller).

Extra slips from these muscles, with thin feeble tendons fixed to the annular ligament or palmar fascia, may co-exist with the proper muscle, which may be diminutive, and not extending to the annular ligament, but lost in the fascia. The proper muscle more developed than usual; its fleshy portion extending downwards as far as the annular ligament—(Albinus). Fleshy towards the annular ligament, the upper part tendinous. Tendinous at both extremities, with an intermediate fleshy belly.

Terminating in two tendons. The ulnar artery separating them. No connexion with the annular ligament or palmar fascia, but inserted into the os scaphoides—(Winslow.)

In a recent case, the palmaris longus, at the distance of two inches above the annular ligament, sent off a thick muscular slip, which crossed the ulnar vessels and nerve obliquely on the radial side of the os pisiforme; dipping in between the abductor and flexor brevis minimi digiti; being intimately connected with the former by means of a narrow tendon, which was attached to the proximal extremity of the first phalanx of the little finger.

A small muscle extending from the coranoid process of the ulna to the anterior annular ligament, which Meckel says, resembles that found in the monkey—(Perrault, in Valentini).

Flexor digitorum sublimis.—A muscular portion, as Cowper observes, is often detached from it to join the flexor profundus; occasionally to unite with the flexor longus pollicis.

The tendon to the little finger wanting; replaced perhaps by the deep flexor—(Quain).

Flexor digitorum profundus.—The muscular slip between it and the flexor sublimis already noticed. Gantzer mentions a case, where a long fleshy and tendinous portion, arising from the internal condyle, was attached to its tendon just above the wrist: receiving a narrow slip from the flexor longus pollicis.

Flexor longus pollicis.—Considerable origin from the internal condyle.

A fasciculus from it to join the flexor profundus just above the wrist, particularly the tendon to the forefinger—(Gantzer).

In the right arm, sending off a small slip on its inner side, from which a delicate tendon proceeded, to be attached to the synovial sheath of the flexors of the fingers above the wrist. In the other arm a larger fasciculus became connected with the index tendon of the flexor profundus.

Pronator quadratus.—An additional stratum of fibres crossing those of the proper muscle.

Supinator radii longus.—Some of the upper fibres blended with those of the brachialis anticus. The tendon partially divided inferiorly.

Extensor carpi radialis longior.—An additional smaller tendon fixed to the third metacarpal bone—(Albinus.) Its tendon terminating by insertion into the fascia over the outer part of the wrist.

Extensor carpi radialis brevior.—Wanting as in many animals. An additional thinner tendon fixed to the fourth metacarpal bone—(Albinus.) An accessary one to the second —(Meckel.)

Supinator radii brevis.—Complete separation of the muscle into two parts, the posterior branch of the radial nerve intervening. Sandifort found two distinct short supinators. Fleischmann considers it an approximation to the development in the monkey, where three supinators are found.

Extensor communis digitorum. — The muscle divided soon after its origin into several distinct portions. The chief varieties consist in the disposition of its tendons. The fourth tendon divided between the ring and little fingers, or altogether wanting —(Albinus.)

Extensor minimi digiti.—Wanting; a tendon sometimes divided into two or three portions, passes from the common extensor to supply its place. Its tendon splitting into two portions, one to the fourth finger; analogy with the muscle in some mammalia—(Meckel.)

Extensor carpi ulnaris.—A small tendon attached to the base of the first phalanx in connexion with the extensor communis — (Meckel). Or with the base of the third metacarpal bone—(Winslow).

Extensor ossis metacarpi pollicis. — Ending in two distinct tendons, one inserted a little above the other. A portion attached to the trapezium. Sending off a slip to supply the place of the extensor primi internodii. A part of the tendon continued into the origin of the abductor pollicis—(Fleischmann.)

Extensor primi internodii pollicis.—Inseparably connected with the extensor ossis metacarpi, and sending off a very diminutive tendon to the other phalanx—(Quain). A smaller portion ending in a tendon which joined the next muscle—(Meckel). Wanting; its place imperfectly supplied by the next muscle which was double, or by the smaller accessory portion of the last-named muscle.

Extensor secundi internodii pollicis.—Double; the smaller tendon very narrow, sending off a thin portion to the first phalanx.

Indicator. — Frequently varies. An accessory smaller portion joining the proper tendon, Gantzer. An additional tendon from it to the middle finger — (Albinus). Rosenmuller found it a digastric muscle, consisting of an upper and lower portion with an intermediate tendon.

Extensor proprius digiti medii. — A proper extensor of the middle finger is sometimes seen smaller than the indicator, and arising below it; this additional muscle may send also a tendon to join the extensor indicis —(Brugnone). An extensor proprius digiti medii is described by Albinus (Annot. Acad.), arising from the radius just above the wrist, close to the groove of the extensor communis—(Sandifort).

HAND.

Abductor pollicis. — Continues above with the tendon of the extensor ossis metacarpi pollicis. Two distinct heads; the superficialis volæ perhaps intervening.

Adductor pollicis.—Consisting of two distinct portions; the superior larger division arising from the os magnum and slightly from the third metacarpal bone; the inferior portion from the third, fourth, and perhaps fifth metacarpal bone. Meckel considers that it approaches, therefore, the normal condition of the adductor of the great toe.

Palmaris brevis.—Said to be sometimes absent. Although often very feeble, I have never seen it deficient.

Abductor minimi digiti.—An accessory portion continued upwards over the annular ligament to join one of the flexor tendons above the wrist.

Flexor brevis minimi digiti.—Wanting. The abductor in such case being more than usually developed — (Meckel). Arising from the fascia of the palm, or about the wrist—Sœmmering.

Lumbricales.—One or more double, or bifurcated; the supernumerary muscle proceeding to the ulnar side of the next finger, or there may be a deficiency of one or two of these muscles.

ABDOMINAL REGION.

Obliquus externus abdominis.—Distinct and separate fasciculi of muscular fibres sometimes found beneath it (a thin fascia intervening), and arising from one, two, or more ribs, taking the same direction as the fibres of the proper muscle, and terminating in its aponeurosis. Absence of portions of the two aponeuroses at the lower part associated with a congenital deficiency of the anterior part of the bladder.

Arising from the six lower ribs only, a distinct slip joining it from the eighth; the tendon deficient at the upper and anterior part—(A. Poland, Guy's Hospital Reports.)

Obliquus internus. — Intersected towards the upper part by one or two tendinous lines, corresponding with those of the rectus.

Cremaster.—Varies much in size, and in its connexion with the abdominal muscles. Distinctly double at its origin—(Cowper). It may have a very extensive origin, exceeding an inch in breadth, from Poupart's ligament. The internal pubic attachment is sometimes scarcely discernible, at others thick and fleshy.

Transversalis.—Intersected by tendinous fibres—(Sœmmering.)

Rectus.—Connected with the ensiform cartilage and sternum; an additional portion as high as the fourth rib. Ascending to the second rib—(Portal, by Lieutaud). Joining a slip towards the production of a "rectus sternalis."

Intersected by tendinous lines below the umbilicus, as in the monkey.

Kelch noticed the existence of an additional rectus, placed laterally between the two oblique; extending from the 10th rib to the middle part of the crista of the ilium. Thus approaching the broad rectus of birds—(Meckel).

In some animals it ends in a tendon, inserted into the whole length of the sternum, the fleshy part being fixed to the inferior extremity of the bone; in others reaching quite to the first ribs—(Douglas).

Usually broader inferiorly when the pyramidalis is absent.

Pyramidalis.—Deficient either on one or both sides, as in most quadrupeds—(Meckel). The two muscles presenting a marked difference in size. Small, or reaching much higher than usual. Double, and even a third on one side—(Santorini, Winslow).

Quadratus lumborum.—Absent on both sides. Additional attachments to the body, or transverse process of the last dorsal vertebra—(Quain).

A small external muscle adherent to its posterior surface; arising from the transverse processes of the second, third, and fourth lumbar vertebræ, whence the fibres ascended, and crossing those of the proper muscle, were inserted into the last of the false ribs—(Winslow).

Psoas magnus.—The upper part of the muscle arising from the last rib, or from the upper margin of the first lumbar vertebra—(Quain).

A portion from the transverse processes quite distinct from the proper muscle, placed between it and the iliacus; the anterior crural nerve intervening—(Meckel.) Constituting an analogy with the monkey—(Valentini, Amph. Zoot.)

Psoas parvus. — Wanting. Theile found it in only one out of twenty bodies, and does not consider it proper to man. Double. Winslow says, "independently of the proper muscle a smaller one is sometimes placed between it and the spine."

The psoas parvus may be connected with the first lumbar vertebra only, or with the second and the fibro-cartilage above it. Commencing by two heads separated by an interval—(Quain).

Iliacus internus.—Some of the external fibres, those arising from the anterior inferior spine, close to the rectus sometimes separated from the rest of the muscle down to their termination in the linea aspera, below the small trochanter.

Diaphragm.—Partially deficient; the defect in the muscle often accompanied with protrusion of some of the viscera through its fibres. A large fasciculus of transverse fibres in front of the central tendon—(Huber). Rudolphi noticed a broad band of fibres below the opening of the inferior cava.

DORSAL REGION, SUPERFICIAL.

Trapezius.—The two muscles not always symmetrical, the left being the smaller; its origin taking place from the six or seven spinous processes of the upper dorsal vertebræ only.

Deficient on the left side, both at its upper and lower part; attached only to the four lower cervical and three upper dorsal vertebræ Its clavicular attachment wanting, as in those animals where the clavicle is absent.

Interval between the upper and lower portions from the absence of some of its middle fibres—(Sœmmering).

Tiedemann found it partially doubled by a substratum of fibres.

Trapezius on each side attached to the two outer thirds of the clavicle, and meeting the clavicular portion of the sterno-cleido-mastoideus.

A slip from the anterior part of the muscle in the neck crossing the subclavian vessels, and attached to the inner third of the clavicle behind the sterno-cleido mastoideus — (R. Quain, plate 25).

Latissimus dorsi.—Varies in respect to the number of spinous processes of the dorsal vertebræ to which it may be attached; from four to eight. Its origin from the ribs too is constantly varying, as also its connexion with the inferior angle of the scapula.

A muscular portion continuous with that of the pectoralis major already noticed; extending across the axilla and sometimes lost in the fascia. Tyson represents the tendinous elongation of this muscle in the orang-outang, attached to the internal protuberance of the os humeri.

In the dog the tendon is fixed to the olecranon after having received the attachment of the panniculus carnosus—(Douglas.)

Sœmmering describes a thin fasciculus of muscular fibres ending in a tendon to be connected with the short head of the biceps and coracoid process. With the coraco-brachialis—(Rosenmüller.)

Levator scapulæ. — The several portions from the transverse processes remaining separate to their insertion. The first portion from the atlas attached below to the clavicle, with the anterior border of the trapezius; resembling that of the monkey.

A very considerable portion of muscle arising with it from the transverse processes of the cervical vertebræ, and passing downwards to be inserted into the middle of the clavicle close to the outer side of the sterno-cleido-mastoideus.

These two instances bear a resemblance to the levator claviculæ of the orang-outang, and some other animals.

Arising from two of the upper transverse processes only, or there may be an additional origin — (Theile). A slip extending to it from the mastoid process—(Meckel). Also from the second rib.

A portion inserted into the spine of the scapula, as in the monkey.

Serratus posticus superior.—A portion extending from the upper part of this muscle by the side of the levator scapulæ to the transverse process of the first cervical vertebra — (Rosenmüller.)

Lower extremity.

Sartorius.—Has been found wanting —(Theile). Gantzer alludes to instances where it was double. An accessory smaller one—(Rosenmüller). Intersected towards the middle by a tendon—(Kelch).

Subcrureus.—Generally exists, though formerly regarded as rare; it varies, however, as to the degree of its development and connexion with the Crureus. — (Albinus, Gantzer). It may consist of a double stratum.

Pectineus.—Inseparably connected with the origin of the adductor longus. United inferiorly with the adductor longus; the profunda artery passing beneath both.

In some animals the pectineus descends very low—(Meckel). In the dog it reaches the inner condyle of the femur—(Douglas). An accessory muscle arising from the inner and upper part of the obturator foramen, and joining the tendon of the muscle—(Winslow).

Adductor longus. — Sometimes divides into two separate muscles. Descending lower than usual, and terminating in a thin tendon connected with the adductor magnus—(Meckel).

Adductor brevis.—Also divided longitudinally, either wholly or in part, as in the monkey—(Meckel).

Adductor magnus.—Consisting of two distinct portions, separated longitudinally, as in the monkey—(Meckel).

Glutei. — A substratum of muscular fibres added to the gluteus maximus, varying in bulk; separated by fascia from the proper muscle, which thus appeared double—(Tiedemann).

Pyriformis.—Frequently consisting of two portions, which may be separated from each other by the whole or part of the great sciatic nerve. A portion of it arising from the notch itself. Inseparably connected with the gluteus medius.

Gemellus superior.—Often wanting, as in monkeys.

Gemellus inferior. — Meckel found it absent at the same time with the other; both are absent in the bat, kangaroo, &c.—May be double.

Quadratus femoris. — Absent — (Albinus). Meckel records a case of this kind in which the gemelli were unusually strong, separated into many distinct fasciculi—(Jancke, de caps. tend.)

Biceps.—A smaller head deficient; remarkable analogy, as Meckel observes, to animals where it is never found.

A third head having a narrow origin from the tuber ischii, and joining the rest of the muscle above the ham—(Gantzer).

A fleshy slip from it to the outer part of the leg where it proceeded to be inserted tendinous between the gastrocnemius and soleus — (Salzmann).

Extensor longus digitorum pedis.—Slip of considerable size to join the tendon of the extensor brevis to the great toe.

Peroneus tertius.—Many varieties both in the extent of its muscular portion and strength of its tendon, which may be very diminutive. Larger than usual, or altogether wanting; it may be replaced imperfectly by a portion of the peroneus brevis.

At other times its muscular portion may almost equal in extent that of the common extensor; its tendon may terminate in the fourth metacarpal bone and in the fascia covering the dorsum of the foot—(Quain).

Peroneus longus.—A smaller accessory muscle arising from the fibula between it and the peroneus brevis; the tendon joining that of the proper muscle—(Theile).

Peroneus brevis.—Double. The accessory muscle sending off a thin tendon, either to join that of the proper muscle, to be fixed to the os calcis, or to terminate in the fascia on the outer side of the heel.

Gastrocnemius.—Joined by a fasciculus arising separately from the femur above one of the condyles, uniting either with the middle of the muscle on its deeper surace, or becoming blended with onf of its heads. In the former case, the additional head passing over the popliteal vessels separated them from the nerve; in the latter instance, where it arose from the external condyle, it separated the popliteal artery and vein—(R. Quain, plate 80, fig. 4 and 5.)

Plantaris.—Frequently wanting; more so than the palmaris longus, of which it appears an imperfect imitation, and a rudiment of a larger muscle in some animals—(Meckel).

Formerly considered to have the same termination in the sole of the foot as the palmaris longus in the hand—(Albinus). Vesalius showed that it never arrived at the sole even in the fœtus.

Terminating in the internal annular ligament — (Quain). In the fascia over the posterior tibial vessels. In the substance of the tendo-achillis near its posterior surface.

A second head arising from the femur above the proper muscle—(Theile).

Soleus.—Thick bundle of fibres added to it; covering the posterior tibial vessels as far as the inner ankle, arising from the deep aponeurosis of the muscle, and ending in a tendon which was inserted into the os calcis on the inner side of the tendo achillis—(R. Quain, plate 85, fig. 1).

Popliteus. — Double. (Fabricius ab Aquapendente.)

Flexor longus digitorum pedis.—Accessory muscle arising from the lower part of the tibia and perhaps from the fibula, becoming narrow and passing down in front of the tendo achillis to the sole of the foot to join either the tendon of the flexor longus or the flexor accessorius — (Rosenmuller.)

Flexor longus pollicis pedis. — Muscle of considerable size arising in company with and on its outer side; terminating in a narrow tendon inserted into the upper and inner part of the os calcis, below the groove for the tendon of the proper muscle, thus forming an additional flexor of the foot.

A supernumerary muscle of this kind from the deep fascia of the leg, being attached inferiorly to the os calcis—(Mayer, in Heymann); the

" accessorius ad calcaneum" of Gantzer.

Meckel considers that where this additional muscle is connected with the fascia, it is the analogue of the palmaris brevis.

Tibialis posticus.—The tendon presents more variety than the muscular portion. Albinus observes that it is also sometimes attached to the second and third metatarsal, cuboid or second cuneiform bone.

FOOT.

Extensor brevis digitorum.—Separated at its origin into three or four distinct heads—(Sœmmering.) The internal head connected with an extra slip from the extensor communis; this internal fasciculus very large and quite distinct from the rest of the muscle.

Flexor brevis digitorum pedis. — Deficiency in some of its external or internal fibres; replaced by a portion of the abductor or flexor brevis pollicis. Meckel observes, that this condition calls to mind the disappearance of the flexor brevis as a distinct muscle in mammalia and birds. In the monkey the internal portion is isolated. The tendon of the little toe wanting; replaced by a part of the flexor longus.

Transversalis pedis.—Sometimes deficient—(Boehmer, Observ. Anat.)

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